



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,156	03/27/2002	Hiroaki Munehira	220800US2XPCT	9787
22850 7590 09/06/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER WANG, QUAN ZHEN	
			ART UNIT 2613	PAPER NUMBER
			NOTIFICATION DATE 09/06/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/089,156

Applicant(s)

MUNEHIRA ET AL.

Examiner

Quan-Zhen Wang

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-6 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites newly added limitations of "said band pass filtering means includes means for controlling one of the first and second optical amplifiers to compensate for a lack of an amplified spontaneous emission light signal at a predetermined wavelength". However, nowhere did the specification as it was originally filed support the newly added limitations. Therefore, the newly added limitations are considered as new matter.

Claim 2 recites newly added limitations of "the optical amplifying means comprises a second optical amplifier having a signal input terminated without reflection". However, nowhere did the specification as it was originally filed support the newly added limitations. Therefore, the newly added limitations are considered as new matter.

Claim 8 recites newly added limitations of "amplifying with a second optical amplifier having a signal input terminated without reflection". However, nowhere did the specification as it was originally filed support the newly added limitations. Therefore, the newly added limitations are considered as new matter.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerfoot et al. (U.S. Patent US 6,704,511 B1) in view of Ryu et al. (U.S. Patent US 6,330,384B1) and further in view of Kosaka (U.S. Patent US 5,986,800).

Regarding claims 1 and 7, Kerfoot discloses a wavelength division multiplexing and optical transmission apparatus (fig. 3) comprising: a plurality of optical transmitting units (fig. 3, transmitter 150) for modulating a plurality of laser signals (fig. 3, laser signal outputted from laser 152) having inherent wavelength with a plurality of data signals (fig. 3, data information 158) and outputting a plurality of modulated optical signals (fig. 3, output from modulator 154) occupying a signal band (figs. 6 and 7, the signal band in the middle of the spectrum); optical amplifying means (fig. 3, broadband noise source 138; column 3, lines 43-60) for outputting an amplified spontaneous emission light signal; band pass filter means (fig. 3, filter 140; and filters in figs. 5 and 5B) for band

pass filtering the output of the amplifying means with a first filter circuit including a first plurality of parallel band pass filters (fig. 5, filters 143.1, 143.2, and 143.3), and a second filter circuit parallel to the first filter circuit and including a second plurality of parallel band pass filters (fig. 5, filters 143.4, 143.5, and 143.6), and outputting a respective first and second non-modulated spectrum slice optical signal (fig. 7, signals 182 and 184), the first non-modulated spectrum slice optical signal (fig. 7, signal 182) being adjacent on a high side to the signal band (fig. 7, signals 186 and 188), the second non-modulated spectrum slice optical signal (fig. 7, signal 184) being adjacent on a low side to the signal band (fig. 7, signals 186 and 188); and optical multiplexing means (fig. 3, MUX 132) for multiplexing the non-modulated spectrum slice optical signals (fig. 7, signals 182 and 184) with the plurality of modulated optical signals (fig. 7, signals 186 and 188) and transmitting a multiplexed optical signal (column 3, line 43 to column 4, line 42), wherein the band pass filtering means controls the amplified spontaneous emission light signal from the optical amplifier means at a predetermined wavelength (by filtering the amplified spontaneous emission light signal). Kerfoot further discloses that the optical amplifying means including an optical amplifier with non input (column 3, lines 53-56). Kerfoot differs from the claimed invention in that Kerfoot does not specifically disclose that the optical amplifying means including an optical amplifier having a signal input terminated without reflection. However, it is well known in the art to terminate an optical amplifier without reflection for a broad band amplified spontaneous emission light source. For example, Ryu teaches an optical amplifying means (fig. 3) for outputting an amplified spontaneous emission light signal including an

Art Unit: 2613

optical amplifier having a signal input terminated without reflection (fig. 3, terminal end 50). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use the termination concept of Ryu in the system of Kerfoot to configure the optical amplifying means including an optical amplifier having a signal input terminated without reflection. One of ordinary skill would be motivated to do so in order to avoid an undesired oscillation (Ryu, column 3, lines 18-24). The modified system of Kerfoot and Ryu further differs from the claimed invention in that Kerfoot and Ryu do not specifically disclose that the first filter circuit is connected to a first optical amplifier and the second filter circuit is connected to a second amplifier. However, Kosaka, from the same field of endeavor, teaches a concept of connecting an optical amplifier (i.e., fig. 4, amplifier 9) to a filter circuit (fig. 4, combination of filters 20a, 20b and 20c) and the amplifier is controlled by the filters at predetermined wavelength (only wavelengths at $\lambda 1$, $\lambda 2$, and $\lambda 3$ are amplified by the amplifier). Since it is well recognized that an optical signal degrades as it travels through a transmission line or an optical component and since it is also well recognized that an optical amplifier could be used at any point of a communication system to restore signal strength of an optical signal, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate optical amplifiers connecting to the first and second filter circuits in the system of Kerfoot, as it is disclosed by Kosaka, in order to restore or boost the optical signal strength to a desired level.

Regarding claims 2 and 8, the modified system of Kerfoot and Ryu further discloses that the optical amplifying means comprises a second optical amplifier (Ryu:

Art Unit: 2613

fig. 3, EDF II) have a signal input terminated without reflection (Ryu: fig. 3, termination end 50). The modified system of Kerfoot and Ryu differs from the claimed invention in that Kerfoot and Ryu do not specifically teach that the optical amplifier means comprises a pair of optical amplifiers. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ more than one optical amplifier for the optical amplification means since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claims 3 and 9, Kerfoot further teaches that the band passing filter means comprises a light dividing element (fig. 5, DEMUX 144) for dividing the amplified spontaneous emission light signal output by the optical amplifier into a plurality of amplified spontaneous emission light signals, and a plurality of optical band pass filters (fig. 5, filters 143.1 to 143.6), connected to a plurality of divided output terminals of the light dividing element respectively, for outputting the non-modulated spectrum slice optical signal.

Regarding claims 4 and 10, Kerfoot, Ryu, and Kosaka have been discussed in regard with claims 1, 3, 7, and 9 above. Kerfoot further teaches an optical multiplexer (fig. 5, MUX 146) for multiplexing two or more outputs of the optical band pass filters with each other and outputting the non-modulated spectrum slice optical signals, and controlling a power of the output to a constant value (column 3, lines 57-60) and Kosaka further discloses an optical amplifier (fig. 4, amplifier 8) for amplifying an output of the optical multiplexer (fig. 4, MUX 19).

5. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerfoot et al. (U.S. Patent US 6,704,511 B1) in view of Ryu et al. (U.S. Patent US 6,330,384B1) and Kosaka (U.S. Patent US 5,986,800) and further in view of Alphonsus et al. (U.S. Patent US 5,764,405).

Regarding claims 5 and 11, Kerfoot, Ryu, and Kosaka have been discussed above in regard with the rejection for claims 1 and 7. The modified system of Kerfoot, Ryu, and Kosaka differs from the claimed invention in that Kerfoot, Ryu, and Kosaka do not specifically teach that the optical amplifying means comprises a plurality of pumping laser signal sources connected to the optical amplifier redundantly. However, it is well known in the art that redundant pumping lasers are used to provide for a virtually non-failing optical amplifier. For example, Alphonsus teaches to use redundant pump lasers (fig. 2, Pumps 50) to provide for a virtually non-failing optical amplifier (column 4, lines 21-32). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an amplifier with redundant pump sources, as it is taught by Alphonsus, along the transmission line, in the modified system of Kerfoot, Ryu, and Kosaka in order to boost the ASE power strength for dummy optical signals and provide reliable transmission system.

6. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerfoot et al. (U.S. Patent US 6,704,511 B1) in view of Ryu et al. (U.S. Patent US

6,330,384B1) and Kosaka (U.S. Patent US 5,986,800) and further in view of Mathis (U.S. Patent US 4,726,644).

Regarding claims 6 and 12, the prior art fig. 1, Kerfoot, Ryu, and Kosaka have been discussed above in regard with the rejection for claims 1 and 7. The modified system Kerfoot, Ryu, and Kosaka differs from the claimed invention in that Kerfoot, Ryu, and Kosaka do not specifically teach that the band pass filtering means comprises a plurality of optical band pass filters connected in cascade. However, it is well known in the art to cascade two or more band pass filters. For example, Mathis teaches to connect two filters in cascade (column 9, lines 44-50). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use a plurality of optical band pass filters connected in cascade, as it is taught by Mathis, in the modified system of Kerfoot, Ryu, and Kosaka in order to provide multiple stage of bandpass filtering with a narrower pass band.

7. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerfoot et al. (U.S. Patent US 6,704,511 B1) in view of Ryu et al. (U.S. Patent US 6,330,384B1) and Kosaka (U.S. Patent US 5,986,800) and further in view of Chalmers et al. (U.S. Patent US 6,184,985 B1).

Regarding claims 13 and 14, Kerfoot, Ryu, and Kosaka have been discussed above in regard with the rejection for claims 1 and 7. The modified system Kerfoot, Ryu, and Kosaka differs from the claimed invention in that Kerfoot, Ryu, and Kosaka do not specifically teach that the band pass filtering means comprises a high pass filter.

Art Unit: 2613

However, a high pass filter, a low pass filter and a band pass filter are well known in the art. For example, Chalmers from same field of endeavor discloses that an optical filter used in a system can be a high pass filter, a low pass filter, or a band pass filter, depending on the specific application (column 5, lines 7-16). Since it is well recognized that an optical filter is used to limit spectral band of optical signals, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate high pass filters, low pass filters and/or band pass filters, as it is disclosed by Kosaka, in the modified system of Kerfoot, Ryu, and Kosaka in order to select optical signals with desired spectral bands.

Response to Arguments

8. Applicant's arguments filed on June 29, 2007 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

Art Unit: 2613

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qzw
8/23/2007



JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600